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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,217	07/10/2001	Suresh Katukam	CISCP707	9962

26541 7590 03/30/2005

RITTER, LANG & KAPLAN
P.O. BOX 2448
SARATOGA, CA 95070

EXAMINER	
PATEL, JAY P	

ART UNIT	PAPER NUMBER
2666	

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/903,217	Applicant(s) KATUKAM, SURESH	
	Examiner Jay P. Patel	Art Unit 2666	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/10/2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 2-10, 12-20, 22-28, 30-35, 37-40, 42-45 and 47-51 objected to because of the following informalities:

The above-mentioned claims depend upon an independent claim or a dependent claim; therefore they should begin with "The" instead of "A" or "An".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-6, 11-16, 21-26 and 29-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Naranjo et al. (US Publication 2003/0076816 A1).

3. In regards to claim 1, Naranjo discloses a communication system inclusive of various input-output terminals, a combined PBX and data router and a variety of external networks (see figure 1, terminals 101, PBX and data router 102 and external networks 103; and page 2 paragraph 23). The system discloses by Naranjo anticipates the applicant's claim of a network consisting of a plurality of nodes and a plurality of

links and the respective source and destination nodes. The input-output terminals are viewed as source and destination nodes and the various links that connect the terminals, the PBX and the data router and the external systems anticipate the plurality of links.

As disclosed by Naranjo, the PBX/router 102 includes a program 102B that calculates a least cost route when a user at a terminal 101 places a connection request for connection to another user terminal 101. The program classifies each call based on the type of call and the quality of service demanded. The least call route is determined by the quality of class and profile of the user (Figure 2 and page 2 paragraph 32). For instance if the user makes short calls, the selected route may measure the call in short increments with the cost per increment being higher than other routes, if on the other hand, a lower cost per increment route may be selected (see pages 2 and 3, paragraph 32). This disclosure by Naranjo anticipates a plurality of potential paths having similar characteristics (for example, all paths may have a cost per increment) and the disclosure also anticipates selecting a potential path from a plurality of paths having similar characteristics. In regards to considering a first potential path for use as the actual potential path, and disregarding the other potential path, Naranjo discloses as stated above that for a short duration call, a higher cost per increment path may be selected while a lower cost per increment path is not considered.

4. With regards to claim 2, Naranjo anticipates determining a cost of each potential path wherein the cost of the first potential path is lower that the cost of other potential paths while both paths share a similar characteristic. Naranjo discloses a table on page

3 for two calls having two potential paths each (see the table on page 3 and paragraph 34). For example, call A has a duration of 1.5 minutes and the cost per second for potential route 1 is 3 cents with the measured increment of 10 seconds and the cost per second for potential route 2 is 2 cents with the measured increment of 1 minute. According to the algorithm disclosed by Naranjo, for call A, route 1 is cheapest although the cost per increment is higher. Therefore, this disclosure anticipates selecting a first potential path with a lower overall cost where both paths have a similar characteristic of having an associated cost per increment.

5. In regards to claim 3, Naranjo anticipates identifying a second potential path for use as the actual potential path where that second potential path is characteristically different from the first potential path. Naranjo discloses a table on page 3 for two calls having two potential paths each (see the table on page 3). For example, call B has a duration of 5 minutes and the cost per second for potential route 1 is 3 cents with the measured increment of 10 seconds and the cost per second for potential route 2 is 2 cents with the measured increment of 1 minute. According to the algorithm disclosed by Narango, for call B, route 2 is cheapest because of a longer duration and a lower cost per increment. Therefore, this disclosure anticipates identifying a second potential path where the second potential path has a different characteristic; namely a longer measured increment in the cost calculation (see the table on page 3 and paragraph 34 on page 3).

6. In regards to claims 4 and 5, Naranjo anticipates comparing the first potential path with the second potential path and selecting one of the paths as the actual path,

with the actual path having a lower cost. As stated above with regards to claims 2 and 3, a cost comparison is made with regards to the two potential routes for calls A and B and based on the lower overall cost the route is selected.

7. In regards to claim 6, Naranjo anticipates identifying all the potential paths between the source and destination nodes. As stated above with regards to claims 2 and 3, a cost comparison is made with regards to the two potential routes for calls A and B and based on the lower overall cost, the optimum route is selected.

8. In regards to claim 11, it merely claims the computer program that carries out the method specified by claim 1 and therefore all the relevant disclosure used with regards to the rejection of claim 1, is also applicable to claim 11. Furthermore, as disclosed by Naranjo, the PBX/router 102 includes a program 102B that calculates a least cost route when a user at a terminal 101 places a connection request for connection to another user terminal 101. The program classifies each call based on the type of call and the quality of service demanded. The least call route is determined by the quality of class and profile of the user (Figure 2 and page 2 paragraph 32). In further regards, since Naranjo discloses a program to calculate the least cost route, it is inherent that the system includes a computer readable medium to store the computer codes of the program.

9. In regards to claims 12-16, they merely claim the computer program that carries out the method specified by claims 2-6 and therefore, all the relevant disclosure used with regards to the rejection of claims 1-6 and claim 11 is also applicable to claims 12-16.

10. In regards to claims 21-26, they merely claim the apparatus that carries out the method disclosed by claims 1-6 and therefore all the relevant disclosure used with regards to the rejection of claim 1-6, is also applicable to claims 21-26. Furthermore, the system disclosed by Naranjo in figure 1 is also an apparatus.

11. Claims 29-33, again they merely claim the apparatus that carries out the method disclosed by claims 1-5 without the computer code specified by claims 21-25; therefore, all the relevant disclosure used with regard to the rejection of claims 1-5, is also applicable to claims 29-33.

12. Claims 36-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Gray et al. (US Patent No. 6646990 B1).

13. In regards to claim 36, Gray discloses a network of five private branch exchanges (PBX) that are connected to two telephones (see figure 1). After the first telephone (first node) has dialed the number for the destination telephone (second node), the first PBX sends a connection request message to the other four PBX's for initiating a cost calculation algorithm for the potential paths through the respective PBX's (see figure 1 and column 2 lines 39-55). After the PBXs have calculated a least expensive route from the particular PBX, they report it back to the original PBX. The originating PBX then compares the cost of these routes to the cost of the direct line route and picks the least cost route (see column 2 lines 48-55). Therefore, Gray anticipates selecting a first potential path from a set of potential paths which have a similar characteristic (direct connection between the telephones) and selecting a second

potential path from a set of potential paths having a similar characteristic (route through PBX's).

Gray also anticipates identifying a third set of potential paths that include elements of the first and second potential paths. Since each PBX sends a bid message to all the connected PBXs, the system is able to identify all the unique connections to the destination including the ones through the PBX network (see column 2 lines 58-61). The system can configure a hybrid third potential path from a the first and second potential paths; for example, suppose a the first potential path is a direct connection between PBX 10 to telephone 20 and the second potential path is from PBX 10 to telephone 20 via PBX 16. If the algorithm computes that a cheaper path would be from PBX 10 to telephone 20 via PBX 16 and PBX 12, then the system would chose that path instead of the first two paths described. Therefore, a hybrid third path that is inclusive of the elements involved in the first and second paths has been identified between telephones 18 and 20 (see figure 1 for diagram details).

14. In regards to claim 37, Gray anticipates determining the costs associated with the path from a set of first potential paths, wherein a cost associated with the first potential path is lower than the costs associated with other potential paths in the first set. As stated above, after the PBXs have calculated a least expensive route from the particular PBX, they report it back to the original PBX. The originating PBX then compares the cost of these routes to the cost of the direct line route and picks the least cost route (see column 2 lines 48-55). Therefore, if the direct line route is a set of first potential paths

and is also the cheapest route, then the system will pick the direct route for communicating between the two telephones.

15. With regards to claim 38, Gray anticipates determining the cost associated with a path from a set of second potential paths, wherein the cost associated with the second potential path is lower than the costs associated with the other potential paths in the second set. If the second set of potential paths is through PBX 16 either directly to telephone 20 or through PBXs 14 and 12 first and then to telephone 20, the algorithm will compute the respective costs associated with the two potential paths and pick the lowest cost route. In other words, the originating PBX compares the cost of these routes to the cost of the direct line route and picks the least cost route (see column 2 lines 48-55). In this instance it is assumed that the second set of potential paths has a cheaper cost associated with them then the first set of potential paths.

16. In regards to claim 39, Gray anticipates determining the cost associated with a path form a set of third potential paths, wherein the cost of a third potential path is lower than the cost of all the other paths included in the third set. For example, the system can configure a hybrid third potential path from a the first and second potential paths; for example, suppose a the first potential path from the third set is a direct connection between PBX 10 to telephone 20 and the second potential path from the third set is from PBX 10 to telephone 20 via PBX 16. If the algorithm computes that a cheaper path would be from PBX 10 to telephone 20 via PBX 16 and PBX 12, then the system would chose that path instead of the first two paths described. The originating PBX compares the cost of these routes to the cost of the direct line route and picks the least

cost route (see column 2 lines 48-55). Therefore, a cheaper hybrid third path that is inclusive of the elements involved in the first and second paths has been identified between telephones 18 and 20 (see figure 1 for diagram details).

17. In regards to claim 40, Gray anticipates each potential path included in the third set of potential paths is characteristically different form every other potential path included in the third set of potential paths. Once again, the least cost algorithm in itself identifies a characteristic of a path, namely the cost associated with it. For example, suppose a the first potential path from the third set is a direct connection between PBX 10 to telephone 20 and the second potential path from the third set is from PBX 10 to telephone 20 via PBX 16. If the algorithm computes that a cheaper path would be from PBX 10 to telephone 20 via PBX 16 and PBX 12, then the system would chose that path instead of the first two paths described. The originating PBX compares the cost of these routes to the cost of the direct line route and picks the least cost route (see column 2 lines 48-55). Therefore, the decisive characteristic associated with each path is its cost and therefore, the cheaper path is characteristically different from its more expensive alternative.

18. In regards to claim 41, Gray explicitly states that the originating PBX is provided with appropriate software agents for determining the least cost route from the first telephone to the second telephone (column 2, lines 22-29). This disclosure anticipates a computer-readable medium that stores the computer codes. In further regards, claim 41 merely claims the computer program that carries out the method specified by claim

36; therefore, all the relevant disclosure in regards to claim 36 is also applicable to claim 41.

19. In regards to claim 42-45, they merely claim the computer program that carries out the method specified by claims 37-40; therefore, all the relevant disclosure in regards to claims 37-40 is also applicable to claims 42-45.

20. In regards to claim 46, Gray discloses an apparatus in the network disclosed in figure 1 that as stated above carries out the method claimed in claim 36. In further regards, claim 46 merely claims the apparatus that carries out the method specified by claim 36, therefore, all the relevant disclosure with regards to claim 36, is also relevant to claim 46.

21. With regards to claims 47-50, they merely claim the apparatus that carries out the method specified by claims 37-40; therefore, all the relevant disclosure with regards to claim 37-40 is also relevant to claims 47-50.

22. In regards to claim 51, the system can configure a hybrid third potential path from a the first and second potential paths; for example, suppose a the first potential path from the third set is a direct connection between PBX 10 to telephone 20 and the second potential path from the third set is from PBX 10 to telephone 20 via PBX 16. If the algorithm computes that a cheaper path would be from PBX 10 to telephone 20 via PBX 16 and PBX 12, then the system would chose that path instead of the first two paths described. The originating PBX compares the cost of these routes to the cost of the direct line route and picks the least cost route (see column 2 lines 48-55). Therefore, Gray anticipates a cheaper hybrid third path that is inclusive of the elements

involved in the first and second paths has been identified between telephones 18 and 20 (see figure 1 for diagram details).

Claim Rejections - 35 USC § 102

23. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

24. Claims 1, 6-10, 11, 16-20, 29, 34 and 35 are rejected under 35 U.S.C 102(e) as being anticipated by Mandhyan (US Patent No. 5923646).

25. In regards to claim 1, Mandhyan discloses a dense network of central offices that are couple to various communication paths (see figure 14 and column13 lines 27-31). The various central offices anticipate a source and destination nodes and all the possible connections between any two central offices anticipate the potential paths between the nodes. Figure 10 in Mandhyan illustrates an algorithm for designing a path. For instance as stated in Mandhayan, a tree is constructed when an initial node is chosen and then a corresponding node having the least cost path is chosen. This path can be a direct path to the destination or an indirect path. Then the subsequent nodes follow the same algorithm until the cheapest route is chosen to the destination (see figure 10 and column 13 lines 42-52; also figure 15 and 16(a) for cost calculations and an illustration of the least cost path). Since the algorithm takes into consideration the

direct and indirect paths in the cost calculations, Mandhyan anticipates identifying the first and second potential paths and subsequently selecting the least cost path.

26. In regards to claim 6, Mandhayan anticipates identifying all potential path arrangements between the source and the destination. Figure 10 in Mandhyan illustrates an algorithm for designing a path. For instance as stated in Mandhayan, a tree is constructed when an initial node is chosen and then a corresponding node having the least cost path is chosen. This path can be a direct path to the destination or an indirect path. Then the subsequent nodes follow the same algorithm until the cheapest route is chosen to the destination (see figure 10 and column 13 lines 42-52; also figure 15 and 16(a) for cost calculations and an illustration of the least cost path). Since, all the indirect and direct paths are identified, Mandhayan anticipates all the limitations of claim 6.

27. In regards to claim 7, Mandhayan anticipates selecting first and second links associated with the first node and determining if the links are protectable. Mandhayan discloses in figure 7 that the logic of the fibers (links) between the nodes are divided into a service and protection portions respectively. Wherein one fiber routes the traffic in a clockwise direction while the other fiber routes the traffic in a counterclockwise directions. In the event of a failure, the network can survive through loop back function that the different directions of the fibers provide (see figure 7, fibers 712 and 714; column 6 lines 7-19).

28. With regards to claim 8, Mandhayan anticipates the determination of an alternate potential path segment. It is stated that, if one of the fibers were cutoff at an

intermediate node, the node would simply route traffic on the other fiber in the opposite direction thus providing an alternate path (see figure 7 and column 6 lines 20-25).

29. In regards to claim 9, all the paths in Mandhayan's embodiment have the similar protection characteristics. Specifically, both fibers have direction based protection mechanism wherein if one link fails, the other link takes over to flow traffic through opposite direction (see figure 7, fibers 712 and 714; column 6 lines 7-19).

30. In regards to claim 10, all the relevant disclosure with regards to claim 9 is also applicable to claim 10.

31. In regards to claim 11, it merely claims the computer program that carries out the method disclosed by clam 1 and therefore all the relevant disclosure with regards to claim 1 is also applicable to claim 11. Furthermore, Mandhayan states that his disclosure is most optimum and efficient when carried out in a processor executed program (see column 14 lines 28-32).

32. With regards to claims 16-20, they merely claim the computer program that executes the method specified by claims 6-10; therefore, all the relevant disclosure with regards to claims 6-10 is also applicable to claims 16-20.

33. With regards to claim 29, it merely claims the apparatus that carries out the method of claim 1 and therefore; all the relevant disclosure with regards to claim 1 is also applicable to claim 29.

34. With regards to claim 34, it merely claims the apparatus that carries out the method of claim 7; therefore, all the relevant disclosure with regards to claim 7 is also applicable to claim 34.

35. In regards to claim 35, it merely claims the apparatus that carries out the method of claim 8; therefore, all the relevant disclosure with regards to claim is also applicable to claim 35.

Claim Rejections - 35 USC § 103

36. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

37. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naranjo et al. (US Publication 2003/0076816 A1) as applied to claim 21 above, and further in view of Hillard et al. (US Patent No. 6765880 B1).

38. With regards to claims 27 and 28, Naranjo teaches all the limitations of claim 21 as stated above. Naranjo fails to explicitly disclose an apparatus consisting of a computer code to carry out a selection of a first link between a source and a first node, a computer code to carry out a selection of a second link associated with the first node, a computer code to carry out a determination of when the first and the second link are protectable and adding them to the first potential path and a computer code that causes the determination of when an alternate potential path segment associated with the source node and the first node.

Hillard teaches the above-mentioned limitations. Hillard discloses a Shortest Path Tree (SPT) algorithm that determines whether a link is protectable or not. For example, when a node can be reached by two separate paths from a given source

node, then the two nodes become part of a loop and therefore any intervening links along those tow separate paths are member of the loop as well. Therefore, any link within the loop is deemed as protected and each path (alternate paths included) is traversed back to the source node marking each link as protectable in the process (see figure 6 and column 6 lines 15-26).

Therefore, it would have been obvious to one skilled in the art at the time the invention was made to combine the algorithm specified by Hillard with the apparatus and method disclosed by Naranjo.

The proper motivation comes from Hillard where he states "The ability of exclude unprotectable paths and consider only those paths that are portectable prior to searching for edge disjoint alternate paths will significantly enhance the speed at which path protected network routing and circuit provisioning is effected" (column 4 lines 1-6).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jay P. Patel whose telephone number is (571) 272-3086. The examiner can normally be reached on M-F 9:00 am - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seema S. Rao 3/21/05
SEEMA S. RAO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

jpp 3/18/2005
Jay P. Patel
Assistant Examiner
Art Unit 2666